REMARKS

Upon entry of the instant amendment, claims 1, 4, 6-7, 9-12 and 14-23 remain pending in the above-identified application and stand ready for further action on the merits.

In this Amendment, claims 1, 4, 11, 12 and 14 have been amended. Claims 5, 8 and 13 have been cancelled. New claims 15-23 are added.

The instant amendment made herein to the claims does not incorporate new matter into the application as originally filed. For example, claims 1, 11 and 14 are amended based on claims 5, 8 and 13. Further, support for the feature that the second layer projects from the end surface in the axial direction of the filter can be found at page 17, lines 1-4 of the specification and Fig. 3. Support for the feature that the first layer, the second layer and the third layer are sintered can be found at the paragraph bridging pages 25 and 26 of the specification. Support for the feature that the second layer is formed by winding the wire mesh one to three times around the outer side of the first layer can be found at page 23, lines 18-20 of the specification. Support for the feature in claim 14 (*i.e.*, the projected portion of the second layer of the filter is squashed against the housing's inner surface so that a gap between the housing's inner surface and the filter's end surface is eliminated to prevent gas from leaking at the filter's end surface) can be found at page 17, lines 1-11 of the specification.

New claims 15-17 are added based on the disclosure at page 23, lines 20-25 of the specification, respectively. Finally, new claims 18-23 are added based on the disclosure at page 10, lines 11-18 of the specification, respectively.

Accordingly, the present amendments to the claims do not introduce new matter into the application as originally filed. As such entry of the instant amendment and favorable action on the merits is earnestly solicited at present.

Claim Rejections under 35 U.S.C. § 112, 2nd Paragraph

Claims 4 and 5 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. This rejection is respectfully traversed.

Claim 4 has been amended to depend on claim 1. Thus, upon entry of the amendment to claim 4, the rejection is overcome. (Incidentally, claim 5 is cancelled.) Accordingly, reconsideration and withdraw of the rejection is required at present.

Claim Rejections under 35 U.S.C. § 103

Claims 1, 4, 6-12 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ota JP '561 (JP 2001-301561) in view of JP '850 (JP 3041850 U).

Claims 5 and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ota JP '561 and JP '850 as applied to claims 1, 4, 6-12 and 14, and further in view of Nakashima et al. US '687 (US 2003/0057687).

The rejections are respectfully traversed. Applicants respectfully request that the rejections be withdrawn based on the following considerations.

Nonobviousness over the Cited References

As recited in currently amended claims 1, 11 or 14, the claimed invention has the first layer, the second layer and the third layer (see claims 1 and 14) or has the steps of forming the layers (see claim 11).

The first layer works as a filter by cooling combustion gas. The second layer works to collect combustion residues and remove fine size particles by filtering. (See, *e.g.*, pages 5-6 and 10 of the specification.) The second layer works to remove dusts.

Further, the second layer with the claimed projection prevents combustion gas from short-passing between the filter and the housing (see claim 14). The third layer is the outermost layer and works to hold the second layer (see page 13 of the specification). The third layer improves a shape-retaining strength of the filter, while reinforcing the whole filer and preventing the second layer from being stripped off outwardly.

Further, since the second layer is formed of a thin layer (*i.e.*, a wire mesh) of one to three windings, the projection of the second layer can be easily squashed against a wall of a housing of a gas generator (see also claim 14).

Further, in the claimed invention, the first layer, the second layer and the third layer are sintered to integrate the three layers. The sintered and integrated filter exhibits unexpected improvements in view of shape-retaining strength and prevention of defects or damage of the meshes. (See paragraph bridging pages 25 and 26 of the specification.) Even small defects or disorder of the meshes can result in breakage of the whole filter. Even if damage on the filter mesh is very small, when an inflator is actuated with the filter, heated gas is concentrated at the damaged portion. Small damage causes larger damage, like a chain-reaction. As a result, the

filter can be totally damaged. Then, the heated gas will enter into an airbag, which is harmful to human being. With the sintered and integrated filter, as recited in the claims, such a problem can be effectively avoided.

Further, the claimed invention has an unexpected, advantageous property in the thermal conductivity. The improved thermal conductivity results in improvement of the cooling effect of the first layer and prevention of thermal damage on the second layer. Eventually, the filtration effect of the second layer having finer particle is improved. The cooling effect of the first layer and the filtration effect of the second layer are synergistically improved. Such results are not expected from the conventional technologies.

In addition, the second layer, which is thin, is also protected from thermal damage. The sintered and integrated filter exhibits an advantageous property in a resistance to a high inner combustion pressure.

However, the primary reference Ota JP '561 fails to disclose or suggest the claimed features, as explained above. For example, as shown in the figures of Ota JP '561, the cited reference merely discloses a filter having two layers, where an inner layer is coaxially combined with an outer layer, whereas the claimed invention has (at least) three layers.

Further, Ota JP '561 fails to disclose or suggest the claimed projection of the second layer. The filters as shown in figures of Ota JP '561 do not have the claimed projection of the second layer. (Incidentally, each of the lower drawings of Figs. 1 to 5 is a mere enlarged view, where the filter of Ota JP '561 is cut to show its cross-section. The claimed projection is not disclosed therein.)

Similarly, the secondary references (*i.e.*, JP '850 and Nakashima et al. US '687) also fail to disclose or suggest the claimed features.

Therefore, there is not provided any rationale and/or reasonable expectation of success based on the combination of the cited references, by which one skilled in the art could arrive at the present invention as claimed, since the cited references fail to disclose or suggest each of the instantly claimed features, as explained above. Thus, it is submitted that the claimed invention is not obvious over the Ota JP '561 in view of the secondary references.

For the Examiner's convenience, a partial English translation of Ota JP '561 is attached hereto.

Based on the foregoing considerations, Applicants respectfully request that the Examiner withdraw the rejections.

CONCLUSION

Based upon the amendments and remarks presented herein, the Examiner is respectfully requested to issue a Notice of Allowance clearly indicating that each of the pending claims is allowed.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Toyohiko Konno, Reg. No. L0053 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By _____

Charles Gorenstein
Registration No.: 29,271
BIRCH, STEWART, KOLASCH & BIRCH, LLP
8110 Gatehouse Road
Suite 100 East
P.O. Box 747
Falls Church, Virginia 22040-0747
(703) 205-8000
Attorney for Applicant

Attachment: Partial English translation of JP 2001-301561 A (3 pages)

English translation in part of JP-A No.2001-301561

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[title of the invention] filter for inflator

[0009]

A high-temperature gas (about 1200 °C), produced by explosion and combustion of a gas generating agent that is ignited at the time of vehicle collision, passes through the inner layer material firstly. The inner layer material is demanded to have an excellent thermal conductivity in order to cool the gas effectively. And since the inner layer material is exposed directly to a high-temperature gas, it is also demanded to have a high melting point and a high heat capacity so that it can withstand (not be melted by) the passage of the high-temperature gas.

[0010]

The outer layer material has an excellent thermal conductivity and cooling performance, and therefore, it further cools the gas, whose temperature is lowered (to about 600 °C) by passing through the inner layer material, and it also cools the inner layer material heated by cooling the high-temperature gas. Then, the low-temperature gas whose slag is removed is introduced to an air bag. Because of the above described structure, the filter for an inflator has an excellent cooling performance and can be made compact and small in size and light in weight.

[0024]

A high-temperature gas (about 1200 °C), produced by explosion and combustion of the gas generating agent that is ignited at the time of vehicle collision, passes through the inner layer material first. The inner layer material is demanded to have an excellent

thermal conductivity in order to cool the gas effectively. And since the inner layer material is exposed directly to a high-temperature gas, it is also demanded to have a high melting point and a high heat capacity so that it can withstand (not be melted by) the passage of the high-temperature gas.

[0025]

Therefore, in this embodiment, the inner layer material is a knitted mesh 1 obtained by stockinet-stitching an iron wire 11 that has a circular cross-section, a thick wire diameter (Ø 0.4) and a surface plated by copper 12. The knitted mesh is wound five times. Iron has a high thermal conductivity rate and is cheaper than stainless. And corrosion control of the knitted mesh is improved by plating its surface with copper 12. Further, since the iron wire 11, that has a circular cross-section and a thick wire diameter (Ø 0.4), is used, the knitted mesh 1 has a high thermal capacity.

[0026]

The outer layer material is demanded to have an excellent thermal conductivity and cooling performance in order to further cool the gas, whose temperature is lowered (to about 600 °C) by passing through the inner layer material, and also to cool the inner layer material heated by cooling the high-temperature gas. Accordingly, in this embodiment, the outer layer material is a knitted mesh 2 obtained by stockinet-stitching a thin aluminum wire 21 that has a substantial triangle cross-section (0.09 mm on a side). The knitted mesh is wound five times.

[0031]

Next, the third embodiment of the present invention (corresponding to claims 1, 2 and 3) will be described referring to Fig. 3. As shown in Fig. 3, the filter C for an inflator is formed by combining an inner layer material with an outer layer material coaxially.

[0035]

Next, the fourth embodiment of the present invention (corresponding to claims 1, 2 and 3) will be described, referring to Fig. 4. As shown in Fig. 4 the filter D for an inflator is formed by combining an inner layer material with an outer layer material coaxially.

[0036]

In this embodiment, the inner layer material is a cylindrical lath metal 7 (having a plate thickness of 0.8 mm), obtained by winding an iron plate, which is provided with numerous circular holes 71, four times. Iron has a high thermal conductivity and is cheaper than stainless. Since a thick iron plate is used, the lath metal 7 has a high heat capacity. Note that an iron plate having a thickness of 0.8 mm can be easily provided with circular holes 71.

[0037]

In this embodiment, the outer layer is a cylindrical lath metal 8 (having a plate thickness of 0.2 mm), obtained by winding an iron plate, which is provided with numerous circular holes 81, four times. Note that a thickness of 0.2 mm of the iron plate is good enough to maintain strength of the lath metal 8 even if the lath metal 8 is provided with circular holes 81.